THE VETERINARY RECORD

A Weekly Journal for the Profession.

EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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EDITORIAL NOTES.

Last March we published a letter by Dr. Fleming which had appeared in *The Sporting Life*. It was written in reply to a letter from Mr. Jno. A. W. Dollar on the subject of Roaring and its surgical treatment, in which the writer denied the value of the operation, disputed Dr. Fleming's claim to originality, and made some very strong comments. Dr. Fleming resented this, and in his letter says, "But as it consists of a tissue of malicious falsehoods, some of which I have contradicted elsewhere, and as I consider it defamatory and libellous to an unusual degree, I have instructed my solicitor to take whatever action he may think necessary. in order to teach that young gentleman the value of truth and propriety."

Upon this we remarked "we have not yet heard whether the legal gentleman has administered the lesson, but we venture to doubt its effective action upon the patient." The lawyer proceeded in the usual way, a writ was issued and damages for libel were put at £5000. Great interest was manifested throughout the profession in what promised to be a professional *cause célèbre*, and the case has been pending ever since. Both sides engaged the services of eminent counsel, and we looked forward to a forensic display of greater ability than has yet attracted veterinary interests. The High Court of Justice would have decided whether Mr. Dollar was to have paid £5000 or whether he was justified in his strictures upon Dr. Fleming. The whole subject of operations for roaring would have been discussed from a novel point of view, and veterinary surgery would have had bold advertisement. If Dr. Fleming had won he would have taught, with a vengeance, "that young gentleman the value of truth and propriety." If he had lost, Mr. Dollar would have claimed that his statements and comments were justified. No such complete and satisfactory termination of the case has, however, been permitted, and Fleming *versus* Dollar has been removed from the law courts. Exactly how the case has been settled we are not yet able to say, but we understand that the plaintiff has been permitted to withdraw on payment of the "young gentleman's" costs, or on payment of some agreed sum of money—not quite the settlement suggested by Dr. Fleming in March last.

In Scotland the dishorning question is becoming more and more lively. At a very large meeting of farmers the proposer of a resolution against dishorning failed to find a seconder. Self-interest, prejudice or ignorance may guide any man's opinion and none of us is able to resist "unconcious bias." What are the facts? The *statements* are most contradictory. How many bullocks are injured by goring? The Secretary of the Highland and Agricultural Society states publicly that in thirty-nine years he has only had one accident from goring amongst his stock. Many obscure men say accidents are common and would have us believe that frightful wounds and even disembowelling occur not infrequently. Who is right?

We have this week devoted a large proportion of our space to an extract from *The Lancet* which embodies the chief matters of interest in the report of the Hyderabad Commission on Chloroform. It is quite as interesting and important to the veterinary as to the human surgeon, and seems to have positively decided no less a point than the real nature of death from chloroform. The "practical conclusions" of the Commission are shortly and clearly stated in fourteen short paragraphs which should be read *in extenso* by every practitioner. The recumbent position on the back is advised as the best and safest in which to administer the agent. A warning is given against pressure being placed on the patient's neck or chest in attempts to control struggling. This is especially applicable to horses and dogs—the latter of which have been quite as often killed by suffocation in attempting to control their movements as by the anæsthetic agent. One statement made by the Commission we are not inclined to accept as applicable to the horse. They say, "apparatus should not be used, as being made to fit the face, it must tend to produce a certain amount of asphyxia." Now no method of chloroforming the horse has ever been more successful than by the use of Carlisle's Chloroform Muzzle, and this not only fits close to the face but absolutely tries to exclude air. It is a question whether "a certain amount of asphyxia" is not really beneficial. The experience of veterinarians on this question would be most valuable, and we invite it. Practitioners who have used the Chloroform Muzzle could supply us with much valuable information.

The Commission tell us we may safely pay no attention to the pulse. The progress of anæsthesia may be guaged by touching the cornea with the fingers and the cessation of winking is good evidence of unsconciousness.

The administration is to be regulated entirely by the respiration. If there is stertor, if the breath is held, or respiration in any way interfered with, we must stop the chloroform and admit air. There must be no delay in doing this, as anæsthesia may

deepen even after the inhalation of the drug is suspended. If respiration stop, artificial respiration is to be immediately commenced. The Commission finish their Report by saying "it has no doubt whatever that, if the above rules be followed, chloroform may be given in any case requiring an operation with perfect ease and absolute safety so as to do good without the risk of evil." This is a strong statement, and utterly opposed to all the teaching of recent years, but it seems to rest on carefully observed facts and to be beyond contradiction.

By the courtesy of the Secretary of the R.C.V.S. we are favoured with a list of names of members who have been removed from the Register. The list is a long one, and will be found on another page. Some of the names we recognise as those of members still living and practising, but who have taken no trouble to answer the Registrar's letters, or to acquaint him with the fact that the postal address on the Register is incorrect. Their negligence will entail on them some trouble and expense to be reinstated.

The Veterinary Surgeons' Act says—"The Registrar shall remove from the said register the names of every deceased person," and also "may remove from the said register the name of a person who has ceased to practise." Certain formalities are provided to enable the Registrar to gain evidence as to whether men whose names are on the register "have ceased to practise." These have been complied with, and the result is the removal of no less than 300 names from the register.

The object of the Council is of course simply to render the register correct, and the name of a man who is alive and wishes to remain on our register may be replaced. Written application to the Council will have to be made by any one who wishes restoration of his name but no name can be entered "except by a resolution of Council." The Council may then direct the Registrar to restore to the register any name removed "either without fee or on payment of such fee not exceeding the registration fee as the Council from time to time fix." Any of our readers seeing the name of a living practitioner in the list of removals will do a service to the unfortunate one by drawing his attention to the fact of his position. Clause 9 of the Act says, "and the absence of the name of any person from such copy (of the register) shall be evidence that such person is not on that register."

Practitioners will, in future, probably be more careful to notify to the Registrar of the College any permanent change of address. Many men, after obtaining the diploma, seem to fancy that no further interest in the profession than their daily business routine is necessary. When such negligence has led to the removal of their names from the register they will have a rude awakening to the fact that if the Act have given them some extra powers it has also placed upon them some new duties—one being to answer letters from the Secretary when addressed to the place connected with their name on the register.

ARTICLES AND CASES.

IS BOTANY NECESSARY?

By Calyx.

I should be glad to see this question of Botany fought out, for I believe that everybody will not endorse the views expressed by your correspondent in a recent issue that a knowledge of Botany is essential to a proper mastery of Pathology and Physiology. Perhaps this was the feeling held at the London School not many years ago, when Botany, practical and theoretical, was assiduously taught to the almost entire exclusion of Pathology. It is probable that the sages considered that when the Veterinary Student had mastered the details of several natural orders, and knew something of the anatomy of the buttercup and daisy, that he was in a position, with the aid of the smallest modicum of Pathological instruction placed at his disposal, to treat splints, spavins, and ring bones. Botany was popular in those days amongst students, (it may be so still) because it afforded the largest amount of relaxation to the non-working man. He was present at lectures where his attention was never demanded or insisted upon, and his practical work was a recognised holiday trip, and a farce; the men arrived at the place of appointment, and three fourths of them were not seen again until the hour of departure drew near. The few industrious ones held together, and listened with interest and delight to the enthusiastic teacher, whose only fault was that he had no control over, students and knew as little about them as he did about the training and management of young horses. A recollection of these trips, and of the behaviour in the lecture theatre towards this worthy man, who is now no more, must bring to many a cheek, now matured by age and discretion, a blush of shame at the indignities to which he was subjected.

I would not refer to a subject which is such a distinct blot on the veterinary student of a few years ago, were it not to attempt to combat the statement that through Botany the graduates are greatly improved in their scientific attainments, and altogether better men than those who entered the profession before this subject was taught. I most emphatically deny it so far as the man of recent years is concerned, and would further add that he is not even as good; he is a weaker pathologist, and a much worse practical man, due, perhaps, more to his training than his fault. But to refer to the subject of Botany. It is urged as one reason for its instruction that it is intimately connected with food, medicine, and poisons. Has any man yet obtained direct practical benefit from his botanical knowledge in connection with these subjects? Is he in a better position to advise on the feeding of a stud of horses because he knows the botanical names of a few grasses, and knows the natural order of oats, beans, and carrots; is he more capable of treating diseases because he has learned the characteristics of the poppy capsule; or, will cases of yew poisoning succeed better in his hands than in those of a neighbouring prac-

titioner deficient in botanical knowledge? We are essentially a practical nation, let us look at this question in a plain manner, and when we find that the horse-master cannot get on without a knowledge of botany, that the hay and corn salesman finds his cunning paralysed through deficient education in this science, or that we are unable to cope with disease because we are ignorant of the fact that the particular drug we wish to adminster, or whose action we are anxious to find an antidote for. has "leaves about two inches long, petiolate, ovate, obtuse, crenate, somewhat hairy, glandular, branches quadrangular, flowers in about four-flowered cymoles, with a tubular, bell-shaped, fine toothed calyx, a whitish or purplish two-lipped corolla, and four stamens," &c., &c., when, I say, we find that the horse-master, hay and corn salesman, and doctor cannot get on without botanical knowledge dripping from every pore, then establish a course of lectures on the science and examine men in it.

Though I differ with your esteemed correspondent on this question of botanical instruction, yet I do not wish it to be inferred that the veterinary student is not the better for a little *practical* botany, knowledge of grasses and grains, the selection of good and rejection of inferior forage. A few days in Cumberland Market, or Mark Lane, would do him more good than four years of veterinary college botany, and would help to make him what the latter will never do, viz., a practical judge of forage.

As to its value in medicine, what in the name of goodness is the object of trying to fill a boy's head with such material as the above? All the student need know about plant physiology could be taught him with his animal physiology. There is only one physiology and one pathology; where that of plants bears upon animals teach it, but don't make it a special subject.

We would do well to bear in mind a saying of the late Dr. Sharpey's, in reference to a very similar question then agitating the minds of the Medical Council, "you may as well require of a medical student a knowledge of the whole art of cutlery before you set him to dissect."*

But why is Botany the only allied science singled out to be taught separately? Why not electricity and magnetism in their application to physiology and medicine; why not hydrostatics in reference to the mechanics of the circulation, absorbtion, and secretion; why not pneumatics in reference to respiration; or optics, sound, heat, or dynamics? Why should any of these infinitely more interesting and useful sciences be excluded from special instruction? We know very well that an outline of physics is imparted during the physiological instruction (or should be), and that is why the student, whose head is already too small for the amount of material to be stowed away, is not troubled with it as a special course. Exactly the same line of reasoning applies to botany, where this science touches our own either in pathology, therapeutics, hygiene, or physiology, teach so much of it as may be practically useful, but leave the remainder to the disciple of Linnæus.

* Pharmacology and Therapeutics, Dr. Lauder Brunton.

BOTANY AND VETERINARY SCIENCE.

Mr. Atkinson's short article on the teaching of Botany merits a reply. His whole argument tells for a higher class of teaching than now exists, and for greater severity in the examinations. He would have it taught so that men really grasped the subject and were able to apply it to physiology and other branches of science. Does he think this can be done in a winter session? does anybody believe that one out of ten veterinary students a year after gaining their diplomas retain even an elementary knowledge of botany? Let us put aside at once the notion that our students now learn botany in "a wide and comprehensive sense." That "the observations made on plants are only secondary to those made on animals in elucidating the laws of life and disease" I am quite prepared to grant, but very few of us concern ourselves in elucidating those laws. We make good practitioners if we use the discoveries of scientific workers and assimilate the result of the labours of experts. We want first and foremost to make good practitioners, and to do this students require all the time now at their disposal. Our duty is to require graduates at their examinations to show proficiency in various subjects, but that proficiency is one of degree. Botany is the least important of all, but it requires the sacrifice of more time during the first session than any other subject. The extent of the study is such that even by giving it undue time and attention only a smattering of it is attained. The positive injury done by retaining botany as a special subject, results from the forced neglect of other and more important matters. The time wasted on it might be devoted to a more extensive study of anatomy and physiology. It is simply proverbial that our men are not good anatomists, and no one will deny that it is more important to understand anatomy than botany. We have no time for a thorough study of both. The comprehensive study of botany is simple impossible for our men, and it is not attempted.

What I may call technical botany, or that portion of the science directly applicable to veterinary science, could easily be taught in other classes. We do not require the knowledge of a gardener, we need not concern ourselves about the varieties of some special tree or the peculiarities of certain flowers. We want men to be able to recognise poisonous plants and feeding stuffs, but botanical classes are not necessary for this. All that is really essential could be taught in the materia-medica course and in another course on hygiene. This latter subject finds no place in our examinations and so is absent from our scholastic curriculum. We neglect an essential and waste time on a non-essential.

When Botany was added to our subjects for examination we had a summer session during which there was a possibility of obtaining some practical acquaintance with the fruits and flowers of plants. Now we have no summer session and yet the same knowledge is expected. Our Council in their wisdom have attempted to limit the botanical requirements of students to certain parts of botany, but that of

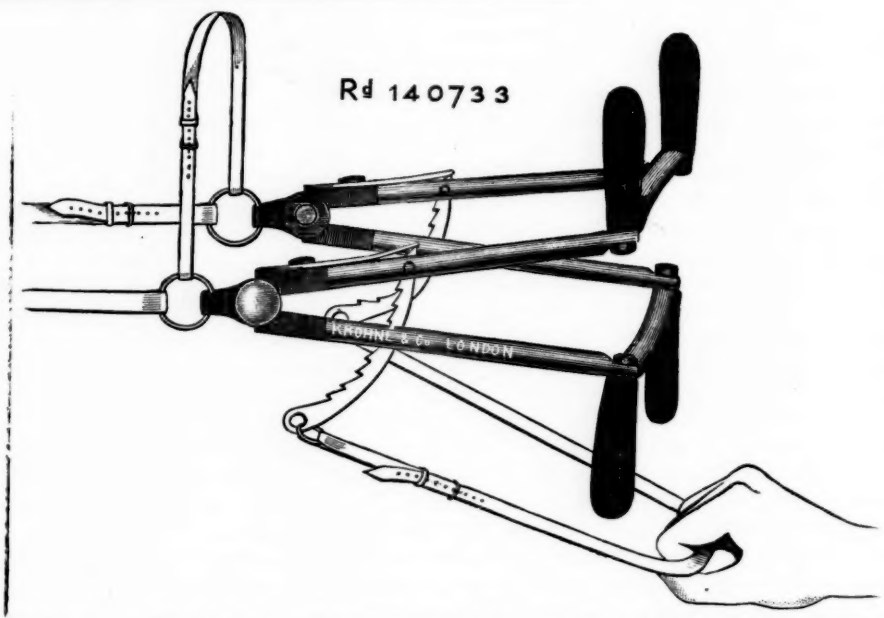
course is simply ridiculous. To a botanist the limits specified in our regulations mean nothing—they may possibly suggest some contraction of work to a teacher, but they have a sphere for the examiner bounded only by the covers of the text-books. Without any straining the whole course of elementary botany is covered, and a student is not safe who neglects any portion. An examiner on Hygiene would ask very different questions concerning grain or grasses from those likely to be put by an examiner on botany, and I have no doubts as to which would be most useful.

In the time at the disposal of our students there is no place for learning botany. Very great advantages would result from its being abolished as a special subject for examination. Every practical part of botany as it applies to food and drugs could be better taught in other classes, and the removal of what is now a dry branch would permit the growth of a living branch. The importance of Hygiene as a distinct subject cannot be over estimated. It is a disgrace to the profession that it is not taught—and only botany stops the way.

W. H.

IMPROVED MOUTH GAG.

By Jas. Cooke, f.r.c.v.s.



The annexed illustration represents a mouth gag which I beg to introduce to the Veterinary profession. It was made at my suggestion by Messrs. Krohne & Seseman, London. Having used one of a similar construction for some time I can speak of its advantages over other gags or balling irons. I have no doubt that its simplicity in structure, easy adjustment, and portability will be greatly in favour of it coming into general use. To fix it in position the india rubber cross bars are to be placed in the animal's mouth, in a similar way to an ordinary bit, and the head strap passed behind the ears and buckled, the gag is then opened by pulling the india rubber bars apart, the distance can be guaged and the mouth piece retained in position by the spring ratchet. The mouth can be closed instantaneously by simply pulling the small strap attached to the ratchet. This gag obviates the risk of injury to the operator's hand, it cannot slip sideways as is sometimes the case with hand gags, when the animal shakes its head, or the assistant looses his hold. There are no pillars or supports to impede the hand of the operator which I believe are to be found in all other mouth gags. It is light and portable, being jointed it can be folded into a small compass and carried in the coat pocket or saddle case.

RABIES AND MUZZLING.

By Jno. A. W. Dollar, M.R.C.V.S.

I am less surprised that Mr. Hollingham finds so little in my paper worthy of consideration when I recall that it answered, and was modelled on, his own, and remember that criticism and consideration demand some power of reflection as well as a subject. My last letter dealt chiefly with two points, viz., (1) a legitimate discussion and (2) a contemptible unprofessional attack. It was sent in reply to several writers, though my *confrère* considers it specially directed against himself. One part expressed my "views as to the usefulness of the muzzle *per se* in stamping out rabies" as invited by Mr. Hollingham.

I showed that the writer had confused the issues and that as a profession we had nothing to do with matters of legislation or execution. I afforded great amusement to my friend by defining our function to be the "formulating of the most desirable conditions" and said that while we had every right, as dog owners, to oppose or support legislative measures in virtue of the power of self-government which is the hereditary right of every Englishman, yet as a professional body we were called on to give evidence only on professional points. I stated that "as experts we had nothing to do with legislation" and I also said that our "attention should be confined to formulating the most desirable conditions, leaving others to put them into practice." My friend discovers an incongruity in these two statements and perhaps there is one. The discovery

seems of a magnitude proportioned to the mind making it, and I should probably be more greatly in error in ascribing to my friend's arguments alone the unanimous approval of muzzling by the meeting to which he refers. In this task he received very able assistance from the brilliant circle of anti-muzzlers convening the meeting and especially from the "spontaneous," and "broken-leg origin of rabies theorists.

I have no intention of defending any and every one whom Mr. Hollingham may set up for the purpose of again knocking down, and although he has erected eight persons "who are now quoted as authorities" (though by whom he does not say) and has made unpleasant remarks concerning them, I do not feel in any way bound to controvert his statements. Up to the present I have confined my remarks so far as possible to facts capable of proof, and I consider it no weakness that I allow Mr. Hollingham's strictures to pass, though I have little doubt they are as undeserved in the many cases as they unquestionably are in the few.

In his next letter I hope my friend will explain how those dogs which are not licensed, but which are strictly muzzled are not affected by the muzzling order. Mr. Hollingham concludes by allowing that my contention as to the scope of our professional duties is correct, but while entirely withdrawing from the statement (in which he was confirmed by his imitators) that "rabies is essentially a veterinary subject" he makes no *amende* to those he so unwarrantably disparaged. The growing habit of abusing those whom one cannot hope to approach is one of the worst features of our modern professional conduct. This course, towards the medical profession, which furnished us with the foundation of our knowledge, which has assisted us so greatly in the past, and promises to do more for us in the future, which lends us dignity, and lights us by reflected glory, this course, I say, is only rivalled by that of Judas, the betrayer, though perhaps the simile is scarcely a just one—to Judas. He, afterwards repented, and went and hanged himself.

To the questions put by Mr. Hollingham for discussion I replied to the best of my ability and in all good faith, and I deeply regret that my answers should have aroused any personal feeling. They were directed against a subject and not an individual, for I cannot help respecting the earnest convictions of even the meanest intelligence.

VETERINARY MEDICAL SOCIETIES.

BORDER COUNTIES' VETERINARY MEDICAL SOCIETY.

The next General Meeting and Annual Dinner will be held on Friday the 21st of February, at the Bush Hotel, Carlisle, chair to be taken at 1 p.m. by T. Greaves, Esq., F.R.C.V.S., Manchester, President for the coming year. After the ordinary business, the President will address the meeting as follows:—

I. Veterinary Medical Association.
II. Apprenticeship and Studentship.
III. The Court of Examiners.
IV. The National Veterinary Benevolent Society, and the Veterinary Mutual Defence Society.
V. The Topics of the day.

JOHN ARMSTRONG, *Hon. Sec.*

CENTRAL V.M.S.

At the next meeting of the Society, to be held on Thursday, February 6th, Professor Woodroffe Hill will read a paper upon "Rabies and its prevention."

S. VILLAR, *Hon Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary General Meeting was held at the First Avenue Hotel, on Thursday, January 9th, 1890, when there were present twenty Fellows of the Society and twelve visitors.

Mr. William Hunting, the President of the Society, occupied the chair, correspondence was read from Messrs. Alfred Broad, H. Edgar, H. D Gibbings, and James Simpson.

Mr. Henry Gray, M.R.C.V.S., of West Ham, was elected a Fellow of the Society, and Mr. W. Anthony Stainton, M.R.C.V.S., and Mr. Donald Gregory, F.R.C.V.S. were nominated for Fellowship.

Mr. A. PRUDAMES submitted to the meeting a Salivary Calculus weighing thirty-eight ounces, which had been removed after death from the cheek of a horse upwards of thirty years of age, the nature of the tumour, which was attached to the cheek by a pedicle, was not suspected, and although it had existed for more than twenty years it has apparently caused the horse no inconvenience, and his (Mr. Prudames) professional attention had never been called to it.

The following paper was then read:—

INFLUENZA OR EPIDEMIC CATARRH.

By H. W. CATON, M.R.C.V.S.

Mr. President and Gentlemen,—

With your indulgence I will read you a few notes on the disease, relating my experience during the last twenty-five years, with a few remarks as to its history, symptoms, and treatment.

Influenza is spoken of as early as 1299 by Laurentius Rusius, as affecting the horses of Seville, when a thousand died. The symptoms exhibited then tally, as nearly as possible, with those of to-day, viz., drooping head, weeping eyes, loss of appetite, and hurried breathing. In 1648, Sollysel, a French V.S. describes it, with similar symptoms, as affecting the French and German army and considered it epidemical. Also in 1683 and 1693 affecting man,

and again in 1699 it was very prevalent in Europe and America; again in 1727 and 1728 in England and Ireland; in 1732 Gibson describes it and speaks of it as being "catching;" 1743 Huxhan speaks of it as affecting man and beast; and during 1850-63-64-71-72-81-83 and 89 it has raged with more or less virulence.

In 1863-4 I have a very distinct recollection of it as affecting the eyes of several farm horses at Stapleford, in Essex, and out of six horses I think there were only three that recovered their sight; the others went "stone blind," if I may use the term, which is very expressive from the fact that the eyes shew that form of blindness owing to the exudation of lymph into the chambers of the eye, and may be noted as far almost as you can see the animal.

The Predisposing Causes

May be the following; hard and exhaustive work, bad feed, and sudden extremes of temperature—nowhere more experienced than in England I should think.

That it is epidemic in character I do not think any one who has had any experience will deny.

It is more prevalent in the Spring and Autumn, than at other seasons, owing I presume to the variable temperature at these times. There is some difference of opinion as to its Contagious and Infectious nature, and strong advocates, I believe, are to found to support either side. I have never made an experiment to test the accuracy of either; and to my mind is is a matter that will stand a fair amount of discussion to arrive at a definite conclusion. It is accepted I believe as being contagious, but I have seen horses stand side by side, with no chance of removing them, and the companion not take it; this might arise from the peculiar idiosyncrasy of the animal, and his not offering a fit habitat for the germ to develope.

Certain it is that a stud is seldom attacked but several of the number become affected, Why not all? They are all placed in a very limited area, breathing the same contaminated air, and in many instances fed and housed in one shed and worked similarly; yet perhaps 10 or 20 per cent. only are affected; several studs I have attended where the per centage has only been 10 to 15 per cent., and has assumed a variety of forms in each stud.

Nature and Symptoms.

Of the exact nature of direct or Epizootic influences which determine the appearance of influenza we know but little; the germ theory I believe has not been demonstrated, although I presume we must have an Influenza Germ in these times.

Symptoms.

These are very protean in character, generally they may be divided into Catarrhal, Bronchial, Pneumonic, Pleuritic, Enteric, Hepatic and Rheumatic.

Catarrhal.—In this form we get a quick weak pulse, dropsy of the conjunctiva, sore throat, yellowness of the mucous membrane, drowsy in appearance, paroxysmal coughing, threatening asphyxia, fœces dry and slimy, urine scanty and high coloured, usual duration from a week to a fortnight.

This form has been christened "Pink Eye" for some reason I cannot explain, and people take to new names with avidity, especially anything of foreign origin, and fancy it is quite a new disease. There always is a peculiar pink appearance of the eye in this affection, but it has only of late years struck someone to christen it so here.

Bronchial.—In this form we get a clammy mouth with furred tongue, difficulty of breathing, stupor, and frequently cardiac sympathy to a great extent.

Pneumonic and Pleuritic.—All the previous symptoms of stupor, &c. combined with congestion of the lung or pleura—in many cases both; with laboured breathing. If any previous disease has existed, the result is frequently fatal.

Hepatic and Enteric.—This form is frequently termed "Bilious Fever." It implicates the liver, causing serious inactivity, with a yellowness of the mucous membranes. Evacuations are pale and shiny, tongue furred and shrunken, urine scanty and thick, and pulse quick and wiry: the horse in slow griping pains, and thirsty.

Treatment.

As a rule of a very simple character depending entirely on the form assumed. In the Catarrh and Bronchial forms, head steamed with either hay or saw-dust, throat dressed with stimulating embrocation or mustard, and repeated as often as the case may indicate, if very sore, and swallowing difficult, gargle carefully with nitrated water, or place some in the bucket, which should stand by the patient about a third full, so that he can moisten his mouth frequently, as he feels disposed; place cap or hood on, clothe and gently exercise not more than ten minutes at a time and at a very slow pace, three times a day; give a loose box, short bedding, and plenty of air without draughts.

If the bowels are at all confined 4 oz. drench of Sodæ Sulph night and morning until fœces are of the desired consistency, and to the same end, induce the patient to eat as much green food, carrots, or mangolds as he will.

Bronchial.—Treat similarly to Catarrhal, with the addition of counter-irritants to the sides and trachea should there be extensive Bronchitis verging into Broncho-Pneumonia which is not uncommon. This opens the question of counter-irritation, whether correct or not, but my experience has led me to the conclusion that it is. I have seen more direct benefit from counter-irritation from Mustard or Blistering Ointment properly applied than any amount of medicine, both in my patients and myself.

In applying the mustard (which I use 18 inches square to a cart horse.) I either clip the hair off (to which clients have a most determined objection) or foment the side—from the shoulder to the last rib but two, and from the superior third of the ribs to the bottom of the false ribs—with water as hot as I can bear my hands in for 10 minutes; then sponge the parts clear of water and apply the mustard, vigorously rub in for ½-hour, and keep on the pillar reins till the irritation has passed off. The same

treatment would apply to either the Pneumonic or Pleuritic form of the disease if severe, but the symptoms must entirely guide the V.S. as to whether simple fomentation of the sides with a cloth well kept wet and covered with water-proof, applied to the sides would be sufficiently effective—in a mild attack it would.

Internally I would administer Sodæ Sulph. either in water, or dissolved and mixed with slop food, every time the animal was fed—say every 3 or 6 hours. If the animal is very low and eats comparatively nothing, I give ½-gallon of stout or beer, gruel, or a quart of stout with Sodæ Sulph. ʒj. Spt. Eth. Nit, ʒjss, Liq Ammon Acet. ʒij, every 6 hours.

Gentle exercise ten minutes at a time, warm clothing, fresh air, and loose box. Sanitary arrangements to be made as perfect as possible.

In the *Enteric* form, should evidence of great pain be present I give sedative draughts of Cannabis, or Tr Opii, as often as the case requires, generally every 3 hours until relieved, enemas, and counter-irritants to the abdomen if necessary, combined with Liq Ammon Acet. Sodæ Sulph. All food scalded and given warm.

In the *Hepatic* form, I generally apply a mustard plaster to the region of the liver, and treat as in the former case.

Warmth, air, and good nursing are as essential as anything, combined with judicious exercise and management generally.

SEQUELÆ.

I have found that in animals having consumption of the lungs, in roarers, shiverers, cases of defective sight, weak loins—in fact with any defect—the disease is almost certain to show evidence in the parts affected and leave them weaker than before.

I treated a good mare that became a very bad roarer after 3 weeks illness in the Catarrhal form (she had no defect previously) and quite recovered her natural tone after a course of Strychnine and Iron, for another fortnight, and now is perfectly sound and working every day.

Another, a hackney I used to drive at Romford, it left her weak in the loins for 6 months, and she had to be driven with the greatest care to prevent her from squatting on her haunches when pulled up. She recovered perfectly.

Two with chronic disease of the lungs have had Purpura to follow, and died from Sphacelus of the lungs. Two have died of Endo-Carditis and fatty degeneration of the heart whilst suffering from this disease. One had recovered and gone to work—being a very excitable animal, and doing just three times the work that was ordered for her, she came in swelled immensely in all four legs, got down and exhausted herself in an hour.

In some cases I find excessive prostration evidenced, either if the animals are not stopped smartly, or if they are put to anything beyond light work, and for very short periods, say 3 hours at the time to start with; and then if they get a relapse, it is almost sure to be the Pneumonic form from exhaustion, and if they are not very closely attended the result is likely to be fatal.

When last we met and Mr. Hunting asked me to write a short paper on Influenza, I little thought we should have had such a constant quantity of it forced upon us day after day in the papers. The name by this time sounds, to say the least of it, stale, but I hope the few remarks I have made upon it may lead to a profitable discussion.

I do not attempt to place anything new before you, but simply to state a few incidents that I have noticed within the last 25 years practice. Gentlemen I thank you for your kind attention.

(We hope to publish the discussion next week).

GOVERNMENT VETY. DEPARTMENT.

CONTAGIOUS DISEASES IN ANIMALS.

Reported in Great Britain and Ireland during the week ended January 18th, 1890.

Pleuro-pneumonia.—In Great Britian 6 fresh outbreaks of this disease were reported, 4 of them in England, in the counties of Hants, Lancaster, and London; the 2 in Scotland occurred in the counties of Forfar and Perth. The number of cattle attacked was 35, of which 29 were in England and 6 in Scotland. In addition to these diseased animals 104 healthy cattle exposed to infection were slaughtered. In Ireland no fresh outbreak or case of pleuro-pneumonia was reported during the week, but 16 healthy cattle were slaughtered in the North Dublin Union because they had been in contact with diseased animals.

Anthrax.—There were 4 fresh outbreaks of this disease reported in Great Britain, in the counties of Chester, Lancaster, Worcester, and Stirling; 4 animals were attacked, all of which died. In Ireland 1 case of anthrax was reported in Wexford; 6 animals were attacked and died.

Swine-Fever.—In Great Britain 50 outbreaks of swine-fever occurred, 48 of them in England and 2 in Wales; 352 pigs were attacked, 130 diseased swine were killed, 158 died, 43 recovered, and 242 remained alive at the end of the week. In Ireland 3 fresh outbreaks of swine-fever occurred and 3 pigs were attacked, 2 of which were killed and 1 died.

Glanders and Farcy.—There were 10 fresh outbreaks of glanders reported in the week. 1 in Herts, 8 in London, and 1 in Middlesex; 28 horses were attacked, viz., 2 in Herts, 19 in London, 1 in Middlesex, and 6 in Lanarkshire. In London 5 outbreaks of farcy occurred and 16 horses were attacked. Other parts of Great Britrin were free from this disease. No case of either glanders or farcy was reported in Ireland during the week.

Rabies.—In England 9 cases of this disease were reported upon in the week, in the counties of Chester, London, Middlesex, Surrey, and York (W.R.); 8 of these were in dogs and 1 in a horse. In Ireland there were 4 cases of rabies returned, all in dogs, in the counties of Londonderry, Cork, and Carlow.

EXTRACTS.

POISONOUS SHEEP DIPS—ACTION FOR DAMAGES.

A case of considerable interest was tried at the King's Co. Quarter Sessions last week. It was an action brought by a farmer named Staunton against Messrs Kelly & Kirby, agents at Frankford, King's County, for "Cooper's Sheep Dip," to recover damages, laid at £40, for breach of warranty and for the loss of twelve sheep, which the plaintiff alleged had died after being washed in Cooper's dip.

The plaintiff in his evidence stated that he bought six packages of the dip from the defendants in their shop at Frankford. He used two of the packages on the 4th of July, and dipped 48 sheep. In a quarter of an hour afterwards he found one of the ewes ill and staggering. He isolated it, but afterwards he found others of the sheep in the same condition. On the 15th they were seen by Mr. Rochfort, veterinary surgeon, who, on hearing that they had been dipped, pronounced them suffering from arsenical poisoning. Twelve of the animals afterwards died and others slowly recovered. He had used all reasonable care in the use of the dip. In cross examination he said he had been using Cooper's dip all his-life, and he had never lost a sheep in this way before. He had three men assisting in the dipping, and he superintended the work himself. Two men held the animal's feet, and a third the head. The animals were turned on their side, and when the quantity of wash in the tub became too low, the men splashed the wash over the sheep with their hands. He could not account for the sickness of the sheep. He did not think that any of the wash got into their mouths. The assistants of the plaintiff gave corroborative evidence, and admitted that they had used the wash with their hands, as Mr. Staunton had described.

Mr. Rochfort, veterinary surgeon, deposed that the sheep had all the appearance of arsenical poisoning, and he knew that nearly all the sheep dips contained arsenic; but he could not account for the fact that the sheep became ill in fifteen minutes unless they swallowed some of the dip. It could not affect them otherwise, unless the dip was not properly made. The sheep had died from exhaustion through want of food, owing to the presence of some irritant in the stomach.

Dr. Thomas Woods, who made a *post-mortem* examination of the stomachs of two of the sheep, deposed that analysis did not disclose any trace of poison. but the lungs had the congested appearance peculiar to arsenical poisoning. He could not understand how any dip acting externally through the skin could affect any animal in fifteen minutes, especially since the men who had used this dip with their hands had not suffered in any way. If there were cuts on the skin of the sheep it might affect them, but from the appearance of the body he did not think the sheep could have got the poison by absorption through the skin.

Counsel for the defence applied for a non-suit on the ground that there was no warranty given by the defendants. who merely sold to the plaintiff an article which he had asked for, which was manufactured in England, and with which the plaintiff was already well acquainted. It should be mentioned, he said, that Messrs. Cooper had expressed their willingness to meet the plaintiff on the merits, but he had elected to proceed against the present defendants.

For the plaintiff it was argued that the defendants were the sellers of the article, and that, therefore, warranty was implied.

Judge Fitzgerald in giving his decision in the case said he had no hesitation in holding that there had been no breach of warranty by the defendants. They had merely sold to the plaintiff a well-defined article for which he had asked. There was no warranty at all implied in the transaction, and, therefore, the plaintiff must be non-suited.

SCOTTISH SOCIETY FOR PREVENTION OF CRUELTY TO ANIMALS.

DISHORNING.

The annual public meeting of the Scottish Society for the prevention of Cruelty to Animals was held on Friday, January 25th. in the saloon of the Royal Hotel, Edinburgh—Lord Provost Boyd presiding. There was an attendance of perhaps sixty or seventy ladies and gentlemen.

Mr. T. R. Buchanan, M.P., submitted a resolution congratulating the members of the Society on the favourable results of its operations during the past year, and on its attaining its jubilee, and heartily commending it to the continued sympathy of the public.

Mr. F. N. Menzies, secretary of the Highland and Agricultural Society, seconded the resolution. The improvement in the treatment of animals on the streets of Edinburgh alone, not to say all over Scotland, as compared with what it was years ago, bore strong testimony, he thought, to the efficient way in which the Society had conducted its operations. He directed attention to the cruelty which, in many instances, characterised the carrying on of the Irish cattle traffic, and characterised as most unjustifiable the allegation made at a Perthshire tenant-farmers' meeting, to the effect that the directors of this Society were a set of city men who knew little about country matters.

Principal Walley, in supporting the resolution, addressed himself chiefly to the question of the dishorning of cattle. He affirmed that if animals were required without horns, surely there was intelligence enough among stock breeders to produce the article required. If polled animals were wanted. they might depend upon it that polled animals would be forthcoming. At a very early period in the life of a calf, the horn could be removed when it was extremely small and no larger than the tip of one's finger, and if it did not absolutely prevent the growth

of the horn in the future, it rendered the new growth so incapable of working harm that the animal was as good as a polled animal. If they had horned animals, say two or three years old, the cruelty or injury they might inflict upon each other could be prevented by a little judicious management in the selection of the animals most suited to consort with each other, and also by the employment of a knob on the horn, or by the removal of a very small portion of the horn from the tip with a minimum of suffering.

Mr. MENZIES regretted that he had omitted to refer to this matter when previously on his feet. In view of the legal question that was pending, it was perhaps as well not to say much; but he should like to say, from many years' experience, that a great deal depended upon the classing of cattle. Only once in thirty-nine years had he had any accident from one animal goring another. Dishorners might talk till they were dumb, but nothing would ever persuade him that cutting through the core of a horn close to head, and then cauterising it with a hot iron, was not downright brutality; and he should fight against it as long as he could. (Applause).

HIGHLAND AND AGRICULTURAL SOCIETY.

REPORT ON ABORTION IN ANIMALS.

The Secretary said—On the part of the Veterinary Department I have to submit the following report by the committee on abortion:—

'The committee entrusted with the investigation into the cause of epizootic abortion have been directing their attention to the question, "Is the disease an infectious one, and if so, is there a special organism concerned in its propagation?" The result of their investigation has been to lend additional support to the view that the disease is micro-organismal, and a number of organisms have been cultivated and isolated from the discharges of cows that have aborted; but it has not been proved that any of these exist in the tissues of the uterus. They are of opinion that the next step should be to study minutely the pathology of this disease, for this has not yet been done. The work to be undertaken would be somewhat as follows:—1st. To ascertain what structural alteration, if any, in the uterus or placenta, or fœtus or its envelopes, underlie abortion. 2nd, To discover whether demonstrable germs are present in the uterine cavity, or wall, or fœtus before abortion. 3rd, To acertain the state of the uterus structurally, as regards the presence of germs at a certain period after abortion. 4th, To continue, on a larger scale, attempts to excite abortion by the introduction of the organisms already isolated from the discharges, or which may be found in the tissues of aborted cows, into the genital passages of healthy cows, or otherwise. The probable cost of such an investigation, carried out on a sufficiently large scale, would not exceed £300.'

When this report was submitted to the Veterinary Committee they recommended the directors to vote £100 towards the investigation, provided £200 more could be obtained from individual and local societies subscriptions. The report came before the directors on 4th December last, when after discussion, during which the president (Lord Polwarth) offered to subscribe £20, a committee was appointed to raise subscriptions:—The matter is now in the hands of this committee, and several subscriptions have already been intimated.

RETROGRADE—POLITICAL SOP.

In reference to numerous memorials from Local Authorities complaining of the cost entailed upon the ratepayers in consequence of the large amount of compensation paid for slaughtered cattle under the pleuro-pneumonia Slaughter Order of 1888, without adequate results, and urging that the order should be modified, revoked, or administered to the Central Authority, and the cost defrayed out of the Imperial funds, the President of the Board of Agriculture requested that the Norfolk Local Authority be informed that, pending the decision of the Government on the subject of central action, the Board are prepared to meet the views of Local Authorities, as far as they are able, without interfering with the principle or defeating the objects of the Slaughter Order. For this purpose the Board will consider any application for deferring the slaughter of dairy and store cattle, which are liable to slaughter, for such time as the Local Authority may deem necessary or expedient. Where an application entertained by the Board of the slaughter of dairy or store cattle is deferred, provision must be made for their detention and complete isolation until the time for their slaughter arrives. In carrying out the proposed modification in the administration of the Slaughter Order, it will be necessary that the Board should be informed in each case as to the circumstances which, in the opinion of the Local Authority, justify the extension for slaughter beyond the ten days named in Article I. of the Order; and also as to the provisions which the Local Authority are prepared to make to secure the isolation and safe custody of the cattle pending their ultimate slaughter. The provision for the detention must be subject to such conditions as regards isolation, branding, &c., as the Board may in each case direct.

KNACKER'S YARDS REGULATIONS.

Samuel Boorman, horse slaughterman, Mitcham, was charged with having in his slaugter-house a horse for the purpose of being killed, but it was not killed within the three days, nor had the mane been removed, or the hair from its tail, as required by the statute.

Mr. Edridge appeared for the defendant, and Mr. Colam, Q.C., prosecuted.

Mr. Colam said the only excuse the defendant gave for not slaughtering the horse was because he had not paid for it, and that he did not remove the hair because he wished to fatten it up.

Frederick George Samson, M.R.C.V.S., inspector of slaughter-houses, said on the 7th December he became aware that a horse was taken to defendant's slaughter-house, and was in a most emaciated condition. He saw it there on the 11th, when it was much poorer. The hair had not been removed as required by the statute.

Inspector Herniman, R.S.P.C.A., said he called at the slaughter-house and saw the defendant, and asked him it he might be allowed to inspect the premises. Defendant consented, and the witness went to a shed there and saw a grey gelding in an emaciated condition, and only fit to be slaughtered. There was not a particle of food or water in the stable, and there was a dead horse lying down. Witness asked the defendant what the horse was there for, and he replied "Get and find out; I will have nothing to say about it." The hair was still on the mane and tail. This was on the 11th of December. Witness called again on the 20th, when he found the horse had not been touched.

This concluded the case for the prosecution.

Mr. Edridge having addressed the Bench for the defence, called

Samuel Baylis who produced a receipt showing that defendant bought the horse on the 6th of December. Witness had never seen it since. He sold it on the condition that defendant could do what he liked with it. Defendant had not paid for it since.

The Bench convicted the defendant, who it was stated had been twice previously fined.

A penalty of £3 15s. 6d. was inflicted.

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* REPORT OF THE SECOND HYDERABAD CHLOROFORM COMMISSION.

The Origin of the Commission.

In presenting the report of the Second Hyderabad Chloroform Commission to his Highness the Nizam, the Commission desires to express to his Excellency the Prime Minister, Sir Asman Jah, its grateful sense of the extraordinary and unprecedented liberality and public spirit displayed by his Highness's Government in carrying out a work which is not only of scientific interest, but of the greatest practical importance to the whole human race.

The Commission was greatly encouraged in this work by the personal interest shown in it by his Highness the Nizam, who, accompanied by his staff, visited the laboratory on two special and memorable occasions.

The report of the work of the first Commission was embodied in the annual report of his Highness's Medical Department for 1888. The experiments of the Commission led them to conclude "that chloroform may be given to dogs by inhalation with perfect safety, and without any fear of accidental death, if only the respiration, and nothing but the respiration, is carefully attended to throughout."

The report was forwarded to the *Lancet* and other medical journals in due course, and the reception it met with, as well as the circumstances which led to the appointment of the second Chloroform Commission, are rendered clear by the following quotation from the *Lancet*:—

[The *Lancet*, March 2nd, 1889.]

In a report of the recent prize distribution at the Hyderabad Medical School, which appeared in our issue of Feb. 23rd, some remarks of Surgeon-Major Lawrie, M.B., M.R.C.S., of the Bengal Army Medical Service, are mentioned which deserve some comment. We learn that a Commission had been appointed to investigate the action of chloroform, and that the result of the researches made upon pariah dogs was that these animals were killed from respiratory failure, and in no case did cardiac syncope occur directly. Unfortunately, Mr. Lawrie contents himself with bare statements of results, adding that these results tally with his own experience, which he believes to be uniquely large. Mr. Lawrie, as a disciple of Simpson and Syme, arrives at conclusions consonant with the teaching of those great clinicians, but utterly at variance with the experience alike of experiment and practice as carried out in Europe. We should require more than the scanty statements of experiments performed upon dogs—notoriously non-susceptible to chloroform syncope—before we could accept the conclusions of the Hyderabad Commission when they appear to go in the very teeth of those at which the Commission appointed by the Royal Medical and Chirurgical Society and by the British Medical Association arrived, and, further, are opposed to the careful and painstaking experiments of such scientific observers as Snow, Claude Bernard, McKendrick, and others too numerous to mention. While welcoming the attention paid to the subject by the Hyderabad Commission, we cannot but feel that, should the Commission inculcate a disregard of the heart as a factor in chloroform dangers, it will do harm and provoke a slip-shod carelessness in the use of that valuable anæsthetic which must in the long run do damage to the cause the Commission has espoused.

General Experiments.

The experiments of a Sub-committee, together with the first twenty-eight performed by the Committee, form a total of 430, and are divided into seven sections. These experiments are recorded in a tabular form. 268 dogs and 31 monkeys were killed outright, and 86 dogs and 39 monkeys were subjected to artificial respiration at varying intervals after the natural respiration had been arrested with chloroform. The animals which were killed had chloroform administered to them in every possible way and under every conceivable condition. A large number of dogs were killed just as they were caught in the bazaars; others at various intervals after having heavy meals of meat or farinaceous food or fat; others fasting; others after the administration of Liebig's extract of meat, coffee, rectified spirits of wine or ammonia. Most of these animals were healthy, but some of them had cardiac disease, and in many the heart and other organs were rendered fatty by the previous administration of phosphorus. In a large number of cases morphine, strychnine, and atropine, singly and in combination, were given by subcutaneous injection at intervals before the inhalation was begun. Chloroform was given with and without inhalers; in the vertical and recumbent positions; in glass and wooden boxes; in large and small doses; by being

* The extended Report from which these extracts are taken will be found in *The Lancet* of 18th January.

pumped into the trachea with bellows; and, in fact, in every way that could suggest itself to the Commission.

The results in one respect are uniform. In every case where chloroform was pushed the respiration stopped before the heart.

The effects of chloroform do not appear to be interfered with or much influenced by any of the variations in the method of preparation of the animal for, or of the administration of, the anæsthetic. There are four general exceptions to this statement. In very slow and prolonged administration, and in cases complicated with partial asphyxia, as well as in one case where one-third of a grain of atropine was administered before the inhalation, the heart stopped very soon after the respiration ceased; and in all cases where the inhalation was accompanied by struggling the animals became insensible with unusual rapidity. In these cases also the interval between the cessation of respiration and the time of possible restoration by artificial respiration was shortened.

As regards the restorative effects of artificial respiration the Sub-committee found it was nearly always successful if commenced within thirty seconds after the respiration ceased, very seldom successful if commenced between thirty and sixty seconds after, and always unsuccessful if not begun till after sixty seconds. In forty-four cases in which artificial respiration proved successful it was commenced on an average 28·2 seconds after natural respiration ceased. In thirty-eight unsuccessful cases the average was 31·5 seconds.

Experiments with Recording Apparatus.

The majority of the experiments were made upon dogs or monkeys, and a few upon horses, goats, cats, and rabbits.

The experiments of the Committee were designed to show the effect upon the blood pressure, heart, and respiration of the inhalation of chloroform, ether, and the A. C. E. mixture, administered in various ways and under varying conditions.

The conclusions to which the Commission has been brought by the study of these experiments are the following:—

Chloroform, when given continuously by any means which ensures its free dilution with air, causes a *gradual* fall in the mean blood pressure, provided the animal's respiration is not impeded in any way, and it continues to breathe quietly without struggling or involuntary holding of the breath—as almost always happens when the chloroform is sufficiently diluted. As this fall continues, the animal first becomes insensible, then the respiration gradually ceases, and lastly the heart stops beating. If the chloroform is less diluted the fall is more rapid, but is always gradual, so long as the other conditions are maintained; and however concentrated the chloroform may be, it never causes sudden death from stoppage of the heart. The greater the degree of dilution the less rapid is the fall, until a degree of dilution is reached which no longer appreciably lowers the blood pressure or produces anæsthesia.

If the inhalation is interrupted at any stage, the fall of pressure still continues at a rate which depends altogether on the rapidity of the fall while the chloroform was being inhaled. This after-fall is probably due to absorption of a portion of the residue of chloroform in the air passages after the stoppage of the inhalation. In this way it often happens, if chloroform is given rather freely, that, though the respiration may be going on when the chloroform is discontinued, it afterwards stops.

There are two conditions which frequently disturb the gradual fall of the blood pressure—viz., struggling and holding the breath,—and it is only by great care that they can be avoided in animals.

Struggling, independently of any change in the respiratory rhythm, appears generally to raise the blood pressure. In one case of a dog much weakened from phosphorus the pressure fell every time he struggled.

When struggling is accompanied, as it often is, by acceleration of the respiration and pulse, especially if the respiration is deep and gasping, it leads to a more rapid inhalation of chloroform, and consequently to a more rapid fall of blood pressure and a greater after-fall. In order to keep the chloroform cap or inhaler in its place during the animal's struggles, the administrator is obliged to hold it down more tightly over the nose and mouth, and this materially assists in hastening the rapidity of the inhalation, and consequently of the fall in blood pressure.

The effect of involuntarily holding the breath—which, as anybody can prove by experiment upon himself, must happen when an inhaler saturated with chloroform is first applied to the face—is much more remarkable, the pressure often falling with great suddenness, while the heart's action is markedly slowed. As soon as the animal draws breath again, the pressure rises as suddenly as it fell, but the gasping respiration which succeeds then causes very rapid inhalation of chloroform, with immediate insensibility and a rapid fall of blood pressure, which quickly becomes dangerous.

The combination of struggling with alternate holding the breath and gasping, which results if chloroform is applied closely to the face without sufficient dilution with air, causes violent fluctuations, and then a speedy fall of the blood pressure, which very soon leads to a dangerous depression with deep insensibility and early stoppage of the respiration. The after-fall under these circumstances is rapid and prolonged. It is this combination of events which causes struggling animals to go under chloroform so quickly.

The effect of holding the breath may occasionally cause a temporary fall of blood pressure after the chloroform inhalation has been stopped, or even when the animal is quite out of chloroform. This fall is recovered from directly the animal breathes again.

Slight continuous asphyxia, such as is produced by pressure on the neck by straps, a badly-fitting muzzle, or hindrance of the chest movements by the legs being too tightly bound down, gives rise to exaggerated and irregular oscillations of the blood

pressure, and slowing and irregularity of the heart's action. If it leads to, or is accompanied by deep gasping inspiration, it is apt, like anything else which causes this, to increase the intake of chloroform and bring about a rapid decline of blood pressure.

Complete or almost complete asphyxia, as by forcibly closing the nose and mouth or closing the tracheal tube after tracheotomy, has an effect similar to, but more marked than, that produced by holding the breath, and the character of the trace corresponds precisely to that produced by irritation of the peripheral end of the cut vagus. The pressure falls extremely rapidly, sometimes almost to zero, and the heart's action becomes excessively slow, or even stops for a few seconds.

This effect of asphyxia is the result of stimulation of the vagi. The proof of this is (*a*) that the trace corresponds exactly, as stated above, to that produced by direct irritation of the vagus, (*b*) division of both vagi entirely abolishes it, and (*c*) the administration of atropine which paralyses the vagus also abolishes it.

It only remains to be considered whether the slow action or temporary stoppage of the heart with great fall of pressure produced by vagus irritation is in itself an element of danger in chloroform administration, and if it is not, wherein the danger actually lies.

The experiments in which deliberate irritation of the vagi was carried on during anæsthesia show unmistakably that irritation of these nerves diminishes rather than enhances the danger of anæsthetics. The effect upon the heart is never continuous, and as the vagus becomes exhausted, or when the irritation is taken off, the blood pressure rises again, as it does when the same result is produced as asphyxia. The slowing of the heart and circulation which is produced by irritation of the vagus by any cause, such as holding the breath in chloroform administration, retards the absorption and conveyance of chloroform to the nerve centres, just as holding the breath, whether voluntary or involuntary, prevents chloroform from entering the lungs: and of itself slowing or temporary stoppage of the heart in chloroform administration is not dangerous.

To answer the second part of the last question in paragraph 15 is easy enough, if it is kept in mind that the effect of vagus irritation upon the heart is never continuous; and in chloroform administration, as the pressure rises again after the slowing of the heart and temporary fall of pressure produced by any form of asphyxia, violent respiratory efforts with bounding heart's action lead, as in the case of struggling, to a rapid and dangerous inhalation of chloroform, and consequent rapid and dangerous decline in blood pressure. It is, in fact, the temporary exhaustion of the vagi after stimulation that is to be feared, and not the actual stimulation as long as it is continued.

In accordance with this fact, it will be found that in chloroform administration neither holding the breath, even if involuntary, or vagus inhibition can be kept up beyond a certain time; and if the chloroform is not removed from the face, one or both of two things may happen: (*a*) when the animal breathes again, it takes deep and gasping inspirations, the lungs become filled with chloroform, and an over dose is taken in with extreme rapidity; or (*b*) when the restraining influence of the vagus is taken off the heart, through the irritation ceasing or the nerve becoming exhausted, the heart bounds on again, and the circulation is accelerated in proportion. The blood then becomes quickly saturated with chloroform, and an over-dose is at once conveyed to the nerve centres. The theory which has hitherto been accepted is that the danger in chloroform administration consists in the slowing or stoppage of the heart by vagus inhibition. This is now shown to be absolutely incorrect. There is no doubt whatever that the controlling influence of the vagus on the heart is a safeguard, and that it is the exhaustion of the nerve which is dangerous.

It can be readily understood how a condition in which the pulse is rapid and bounding, with high blood pressure, leads to more rapid absorption of chloroform from the lungs, and a more rapid propulsion of the chloroformed blood to the medulla oblongata, and consequently to a more rapid paralysis of the respiratory and vaso-motor centres and precipitous fall in the blood pressure.

The effect of artificial respiration in restoring an animal after the respiration had stopped was always marked. In a few exceptional cases, such as Experiment 159, a phosphorus dog, and Experiment 142, a horse which had an enormous over-dose, although the artificial respiration was commenced as soon as possible after the breathing was noticed to have stopped, it was not successful.

Complete stoppage of the respiration always means that an over-dose has been administered and the overdose may have been so great as to produce a very prolonged after-fall of blood pressure, and may thus render restoration impossible. As it is impossible to say whether, after chloroform has been pushed and then discontinued, the respiration will be restored spontaneously or not, so it is never in any case certain that artificial respiration will restore the natural respiration and blood pressure, no matter how soon it is commenced after the respiration stops.

The time which elapses before artificial respiration succeeds in restoring natural respiration varies very greatly. In one case, Experiment 116, it was continued for eleven minutes before the first natural gasps commenced. This period is undoubtedly prolonged in some cases by a condition of physiological apnœa, which renders it unnecessary for the animal to breathe. Consequently, whenever the pressure rose considerably during artificial respiration it was stopped, and the animal then generally breathed after a few seconds.

The time which may be allowed to pass with impunity before commencing artificial respiration also seems to vary considerably. This point was not particularly attended to in the manometer experiments except in Experiments 162 and 178, which were instituted to test the truth of the opinion formed by the Sub-committee that morphine had some slight action in impairing the efficiency of ar-

tificial respiration. In these cases the commencement of artificial respiration was postponed for more than two minutes after respiration ceased, and was successful; but this is certainly far above the average interval that can be allowed with safety. The success of artificial respiration in restoring the blood pressure is in some cases very remarkable; *vide* especially Experiment 49, in which the heart had apparently ceased beating, and the dog was believed by every one present to be dead, and yet recovered with artificial respiration. The success in this instance is due to the fact that chloroform had only been administered for a few seconds, and that the depression was the result, not of continuous chloroform administration until respiration ceased, but of a long and severe after-fall.

In order to test the alleged danger from shock during chlororform administration, the Committee performed a very large number of those operations which are reputed to be particularly dangerous in this connexion—such as extractions of teeth, evulsion of nails, section of the muscles of the eye, snipping of the skin of the anus, &c. In many cases the operation was performed when the animal was merely stupefied by the chloroform and not fully insensible. In such cases a slight variation in the blood pressure would sometimes occur, such as one would expect from the irritation of a sensory nerve or from the struggling that ensued, but in no case in any stage of anæsthesia was there anything even suggestive of syncope or failure of the heart's action.

Other operations which seemed likely to produce shock, such as violent blows upon the testicle, were singularly devoid of effect. Failing to lower the blood pressure by any of these methods, recourse was had to section of the splanchnics; but the low condition of the blood pressure this produced appeared, like stoppage of the heart from vagus irritation, to be a source of safety rather than of danger during chloroform administration.

The conclusion, then, is this: Chloroform has no power of increasing the tendency to either shock or syncope during operations. If shock or syncope from any cause does occur, it prevents, rather than aggravates, the dangers of chloroform inhalation.

The truth about the fatty heart appears to be that chloroform *per se* in no way endangers such a heart, but, on the contrary, by lowering the blood pressure, lessens the work that the heart has to perform, which is a positive advantage. But the mere inhalation of chloroform is only a part of the process of the administration in practice. A patient with an extremely fatty heart may die from the mere exertion of getting upon the operating table, just as he may die in mounting the steps in front of his own hall door, or from fright at the mere idea of having chloroform or of undergoing an operation, or during his involuntary struggles. Such patients must inevitably die occasionally during chloroform administration, and would do so even were attar of roses or any other harmless vapour substituted for chloroform.

The effect of hœmorrhage was tested by opening the femoral artery and allowing a considerable quantity of blood (eight to twelve ounces) to escape. An immediate lowering of the blood pressure results, and this is very slowly recovered from. Such an accident, however dangerous it may be in itself, in no way affects the action of chloroform, except in so far that a patient who has been nearly bled to death would require less chloroform in his system to put him into a state of anæsthesia. The low condition of his blood pressure produced by the hæmorrhage would tend to prevent the too rapid intake of chloroform, exactly as in the case of cutting the splanchnics. (*Vide supra.*)

As regards the effect of chloroform upon different animals, it may be said to be the same as far as its anæsthetic action is concerned. There are certain peculiarities in its effect on the respiration and circulation connected with its local irritant action on the nostrils and fauces which are interesting to notice. Thus, when concentrated chloroform vapour is applied to the nostrils of rabbits, they hold their breath, and the heart's action is slowed at once. This is always said to be due to reflex inhibition of the heart from irritation of the nasal branches of the trigeminus reflected through the vagus, and is by no means peculiar to chloroform, but is produced equally by any irritant vapour, such as ammonia or acetic acid.

Practical Conclusions.

The following are the practical conclusions which the Commission think may fairly be deduced from the experiments recorded in this report. :—

I. The recumbent position on the back and absolute freedom of respiration are essential.

II. If during an operation the recumbent position on the back cannot, from any cause, be maintained during chloroform administration, the utmost attention to the respiration is necessary to prevent asphyxia or an overdose. If there is any doubt whatever about the state of respiration, the patient should be at once restored to the recumbent position on the back.

III. To ensure absolute freedom of respiration, tight clothing of every kind, either on the neck, chest or abdomen, is to be strictly avoided; and no assistants or bystanders should be allowed to exert pressure on any part of the patient's thorax or abdomen, even though the patient be struggling violently. If struggling does occur, it is always possible to hold the patient down by pressure on the shoulders, pelvis, or legs without doing anything which can by any possibility interfere with the free movements of respiration.

IV. An apparatus is not essential, and ought not to be used, as, being made to fit the face, it must tend to produce a certain amount of asphyxia. Moreover, it is apt to take up part of the attention which is required elsewhere. In short, no matter how it is made, it introduces an element of danger into the administration. A convenient form of inhaler is an open cone or cap with a little absorbent cotton inside at the apex.

V. At the commencement of inhalation care should be taken, by not holding the cap too close over the mouth and nose, to avoid exciting, strug-

gling, or holding the breath. If struggling or holding the breath do occur, great care is necessary to avoid an over-dose during the deep inspirations which follow. When quiet breathing is ensured as the patient begins to go over, there is no reason why the inhaler should not be applied close to the face; and all that is then necessary is to watch the cornea and to see that the respiration is not interfered with.

VI. In children, crying ensures free admission of chloroform into the lungs; but as struggling and holding the breath can hardly be avoided, and one or two whiffs of chloroform may be sufficient to produce complete insensibility, they should always be allowed to inhale a little fresh air during the first deep inspirations which follow. In any struggling persons, but especially in children, it is essential to remove the inhaler after the first or second deep inspiration, as enough chloroform may have been inhaled to produce deep anæsthesia, and this may only appear, or may deepen, after the chloroform is stopped (*vide supra*). Struggling is best avoided in adults by making them blow out hard after each inspiration during the inhalation.

VII. The patient is, as a rule, anæsthetised and ready for the operation to be commenced when unconscious winking is no longer produced by touching the surface of the eye with the tip of the finger. The anæsthetic should never under any circumstances be pushed till the respiration stops; but when once the cornea is insensitive, the patient should be kept gently under by occasional inhalations, and not be allowed to come out and renew the stage of struggling and resistance.

VIII. As a rule, no operation should be commenced until the patient is fully under the influence of the anæsthetic, so as to avoid all chance of death from surgical shock or fright.

IX. The administrator should be guided as to the effect entirely by the respiration. His only object while producing anæsthesia, is to see that the respiration is not interfered with,

X. If possible, the patient's chest and abdomen should be exposed during chloroform inhalation, so that the respiratory movements can be seen by the administrator. If anything interferes with the respiration in any way, however slightly, even if this occurs at the very commencement of the administration, if breath is held, or if there is stertor, the inhalation should be stopped until the breathing is natural again. This may sometimes create delay and inconvenience with inexperienced administrators, but experience will make any administrator so familiar with the respiratory functions under chloroform that he will in a short time know almost by intuition whether anything is going wrong, and be able to put it right without delay before any danger arises.

XI. If the breathing becomes embarrassed, the lower jaw should be pulled, or pushed from behind the angles, forward, so that the lower teeth protrude in front of the upper. This raises the epiglottis and frees the larynx. At the same time it is well to assist the respiration artificially until the embarrassment passes off.

XII. If by any accident the respiration stops, artificial respiration should be commenced at once, while an assistant lowers the head and draws forward the tongue with catch-forceps, by Howard's method, assisted by compression and relaxation of the thoracic walls. Artificial respiration should be continued until there is no doubt whatever that natural respiration is completely re-established.

XIII. A small dose of morphia may be injected subcutaneously before chloroform inhalation, as it helps to keep the patient in a state of anæsthesia in prolonged operations. There is nothing to show that atropine does any good in connexion with the administration of chloroform, and it may do a very great deal of harm.

XIV. Alcohol may be given with advantage before operations under chloroform, provided it does not cause excitement, and merely has the effect of giving a patient confidence and steadying the circulation.

The Commission has no doubt whatever that, if the above rules be followed, chloroform may be given in any case requiring an operation with perfect ease and absolute safety so as to do good without the risk of evil.

EDWARD LAWRIE (President),
T. LAUDER BRUNTON,
G. BOMFORD,
RUSTOMJI D. HAKIM,
} Members.
EDWARD LAMRIE, Surgeon-Major.

Hyderabad, December 18th, 1889.

The Rabbit pest in Australia.

We read in the *Melbourne Leader* that preparations are being made by the Minister of Agriculture, Victoria, to put the Rabbit Suppression Act in operation immediately. In future the whole work of rabbit extermination is to be carried on by the Government. Parliament has voted a sum of £44,450 for the purpose. Of this amount, £12,000 will be set apart for the erection of vermin-proof fences, and the balance will be available for salaries for rabbit inspectors and men engaged in laying poison. The Governor in Council has appointed fifty-seven rabbit inspectors. No one of these inspectors is to receive more than £250 per year. To each inspector a district has been allotted, and it will be his duty to see that all vermin are kept down, not only upon Crown lands, but also upon private holdings. Owners of freeholds neglecting to clear their land are to be rigorously prosecuted.

Cattle Disease.

Mr. Chaplin, President of the Board of Agriculture, has consented to receive, on February 5th, a deputation of the Central and Associated Chambers of Agriculture who desire to urge on the attention of the Government the necessity for early legislation, and for entrusting to the central authority the regulation of compulsory slaughter and the control of animals in herds where outbreaks of pleuro-pneumonia occur, and providing that compensation in all cases should be provided from the national exchequer.

Royal College of Veterinary Surgeons.

List of names of Members removed from Register through non-compliance with Section 5 sub-section 4 of the Veterinary Surgeons Act 1881.

Abbot, Charles, Manchester
Allan, Ralph, Berwick
Allan, William, Chesham
Allen, J. G., Balham
Allison, Jas. N., Carmarthen
Andeson, Alex., Glasgow
Anderson, G. R., Middlesborough
Ansell, W. M., Limehouse
Archer, David, Brecontree Heath
Arthur, Robert, Hereford
Attwood, Alex., Lower Duffryn
Badderley, W. W., Worcester
Bagg, Alderman C., Blackheath
Bailey, Geo., Shifnal Salop
Baker, H. Halton, Cheshire
Baker, H. M., Liverpool
Banister, A. E., Bridport
Barclay, James. Perth
Barker, John, Bath
Baldwin, H. S. C., Bacton
Balfour, Geo. H., M.D., Edinburgh
Barnes, H. J., West Derby, L'pool
Barnett, John, Plymouth
Barton, Robt. Jas. Tunbridge Wells
Batchelor, A. H., A.V.D.
Bicknell, Isaac, Indian Army
Bartrum, W. H., Brighton
Baby, W. S., Stockton-on-Tees
Baxter, John, Drymen, Stirlingshire
Bean, Nicholas, Stockton-on-Tees
Bean, Parrington, Stockton-on-Tees
Bell, R., Winchester
Bennett, A. B., Edinburgh
Bettison, J. E., Newbury, Berks
Bakeley, John, Belfast
Boden, Hesman, Bermondsey
Borman, C. E., Waltham, Lincs.
Borrowman, James, Edinburgh
Briggs, John, Coventry
Broad, G., Kentish Town, N.
Brown, J. H., Lincoln
Bruce, Neville, Islington, N.
Bunbury, S. B., Piccadilly
Burbage, J. H., Manchester
Burd, B., Liverpool
Burnham C., Lincoln
Bushman, J. E., A.V.D.
Buxton, James, Manchester
Buzzard, A. E., Claycross, Derby
Campbell, A., Birmingham
Capes, W., Lambeth
Carless, J. R., Whitechapel
Carlisle, W., Wigton
Carmody, W. T., Kensington
Carter, Frank L., Manchester
Cattrall, J. G., Burton Mews, W.
Cave, Geo., Liverpool
Chalmers, James, Carlisle
Charles, J. W., Accrington
Checketts, Benj., Nantwich
Chisnal, W. G., Liverpool
Chinn, W J., Grays Inn Road
Clark, Andrew, Ballantree
Clark, John, Stirling
Clarke, W. S., Gt. Waltham, Essex
Clarkson. W., A.V.D.
Constant, S. P., A.V.D.
Cooper, John, Manchester
Cooper, John, Walsall
Cotterell, James, Lowestoft
Crafts, H. W. L., Fareham
Crawford, W., Glasgow
Creswell, H. B., Manchester
Crombie, James, Dunfermline
Crosby, John J., Whitley, York.
Cross, G. T., Ipswich
Cullimore, J. M., Indian Army
Cunningham, Thos., Otago, N. Z.
Day, F. W., Tewkesbury
Day, Walter, Weymouth
Dexter, Thos. P., Chelsea, S.W.
Dickson John, Glasgow
Dickson, Thos., Glasgow
Dobson, Robt., Ticknall, Derby
Donaldson, John, Sen., Paisley
Douglas, John, Denbigh
Dow, James, Knightsbridge, S.W.
Draper, Henry, Ilkeston, Derby
Easton, Alfred, Chester
Eastwood, Frank, Preston
Ebbetts, E. R., Hanworth
Edgar. Thos., Dunlop
Edwards, Thos., Wingham
Elford, Robt., Calne
Emms, C. W., Sherborne
Emms, H. G., Norwich
Evans, E. P., Cardiff
Farmer, James, Upper Kennington Lane, S.E.
Fawcett, Benj., Morpeth
Field, A. V., Huddersfield
Finlay, Geo. B., Belfast
Fitzgerald, James, Limerick
Flavell, G. F., Finchley, N.
Fleming, Wm., Edinboro'
Flint, W., Rotherham
Forbes, Peter, Kidderminster
France, John, Birmingham
Francis, J. J. A., Chelsea
Furnivall, John G., Bayswater W.
Garnett, Geo., Regents Park Road
Gibson, Geo. Ed., Hull
Giffen, Thos., Belfast
Gillingham, Geo., Richmond
Glass, Robt., Glasgow
Gooch, C. A., Indian Army
Goodwyn, P., Ipswich
Gray, G., Romford
Green, C. S., Paddington
Green, J. L., Prestbury
Green, Thos., Manchester
Gudgin, T. P., A.V.D.
Hadfield, Thos., Durham
Hall, H. Spilsby
Harber, W. A., Kidderminster
Hardy, J., Holland St., Blackfriars
Hare, J. B. A. Cashel Co. Tipperary
Harrison, T., A.V.D.
Hausmann, J. P. W., Hanover
Hawke, John A., Cockermouth
Hay, G. W., Roxburgh
Heatley, S. S., Edinburgh
Hewlitt, Ebenezer, Fermanagh
Hill, Edwin, Nottingham
Hill, John H., Brecon
Hodgson, J. G., Chingford
Hoey, J. P., Indian Army
Hogreve, H. Junr., A.V.D.
Holmes, P., Birmingham
Home, James, A.V.D.
Howard, Thos., Mitcham
Humphries, Geo., Manchester
James, Wm., Brighton
Jeeves, James, Scarborough
Jeffrey, Robt. T., Camberwell
Jennings, J. F., Indian Army
Johnston, Geo., A.V.D.
Jones, A. J., Manchester
Jones, Thos., Wrexham
Joss, John, Aberdeen
Kay, Thos., Manchester
Kershaw, Andrew, Spilsby
Kidney, Geo., Belfast
Lamb, G. W., Shipton
Langley, P. D., Enfield
Lawrenson, James, Craston
Leakey, A. G., Whitehaven
Learoyd, Edwd., Edinburgh
Legge, John, Isle of Islay
Lloyd, Thos. Edwd. Jnr., Chester
Loades, A. W., Bishop Auckland
Llewellyn, W. H., City Road
Lovegrove, Charles, Llanwddyn
McCaldon, Croydon
McCauley, Thos. M., Belfast
McHugh, John, Thos., Darwen
Mackenzie, Andrew, Glasgow
McKerron, H., Leemahagow
Maclay, Thos., Glasgow
McLaren, John, Glasgow
McNaughton, J., Langholme
Maguire, Robt. John, Pollockshields
Mann, Andrew, Junr., Thornby
Marshall, Thos., Coventry

Martin, C. H., Kingsland Crest., E.
Martin, J. G., Altrincham
Martin, W., A.V.D.
Martin, W. E., Beaminster
Mason, Joseph, Preston, Lancs.
Mathews, Robt., W., Drogheda
Mathewson Geo., Galashiels
Maxon, John, Canterbury
Millar, J. H., Stroud
Minikin, J. B., Wexford
Moffatt, G. D,. Edinburgh
Molyneux, Nathan, Blackpool
Moore, W. S., Newcastle-on-Tyne
Moorey, Jas., Burton-on-Trent
Murras, W. C., Portobello
Muir, Robertson, Dublin
Neate, Chas. H. Charing
Neeve, S.W., Woodbridge
Norfolk, J. F., Great Marlow
O'Connor, Jos., Dublin
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Park, Robert, Glasgow
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Pickworth, H. W., Surbiton Hill
Pile, John, Jersey
Pollock, G. H., Bridgeton
Porteous, T. A., Leith
Porter, Richd., Winchcombe
Pratt, Thos., Piccadilly
Pring, John, Salop
Ramsden, Saml., York
Redmond, W., Witney
Redmond, W., Charlestown, U.S.A.
Reeve, G., Lewisham Road,
Reid, Peter, Falkirk
Riddell, Joseph, Abergeldie
Robertson, Andrew, Glasgow
Robertson, Thos., Beaminster
Robinson, C. S., Brentwood
Robinson, John, A., Peterborough
Rogers, W. Whitechapel Road, E.
Rogerson, John, Clitheroe, Lancs.
Roughsedge, W. H., St. Helens, Lancs
Rush, W., Thaxted
Rowland, J. T., Sloane St., Chelsea
Ryan, W., Limerick
Scott, W., Hampstead
Selfe, H. L. C., Borough
Shade, James, Glasgow
Sheehy, J. G., Limerick
Shenton, Robt., Asbburne
Sherley, W. R., Wimbledon
Sherwood, Thos. G., Strand, W.C.
Sim, Hugh, Chepstow
Simpson, Wm., Lancaster
Sinclair, David, St. Austell
Slack, James, Guildford St., W.C.
Smith, C. E., Holborn
Smith, David, Forteviot
Smith, F. A., South Lincoln
Smith, Gilbert, Closeburn
Smith, John, Yeovil
Smith, John, Barrow-in-Furness
Smith, Kirtland, South Lincoln
Sorby, Fredk., Windsor
Sparrow, Geo. James, Torquay
Spence, Charles B., Linton
Sperring, John Joseph, Lichfield
Spicer, W., Lambourne
Shaveley, W., Highbury, N.
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Stevenson, W. J., Dublin
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Sutton, Charles, York
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Talbott, H. C., Maida Hill
Tate, J. N., Sligo
Taylor, W., Edinburgh
Taylor, W. E., Market, Harboro'
Teviotdale, J., Elgin
Thompson, J. C., City Road
Thompson, J. C., Londonderry
Thomson, Joseph, Boroughbridge
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Turner, J. J., Edinburgh
Tyrell, John, Dublin
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Wallis, W., Charlestown, U.S.A.
Watkins, W. R., Brynmaury
Watlock, W., Bath
Watson, Geo., Loftus-in-Cleveland
Watt, Alex., Edinburgh
Weston, Geo , Indian Army
Webb, H. P., Nuneaton
Weighill, W. S., Middlesbro'
Weir, Robt., Isle of Coll
Whisken, E. C., Newton
White, S. G., Barnstaple
Whitecross, John W., Edinburgh
Whyttock, Alex., Perth
Wiggins, W., Islington
Williams, J. J., Camberwell, S.E.
Williams, John, Spitalfields
Wilmot, Robt., Edinburgh
Woolner, E. H., Manchester
Wilson, G., Edinburgh
Wren, A. B., Stourbridge
Wright, F., Streatham, S.W.
Wyer, W., Gloucestershire
Wyllie, G., Aberdeen
Young, A. T., Kingerby

(The name of town or district given indicates the last correct address which appeared on the Register).

CORRESPONDENCE.

"WEBB'S EMASCULATOR."

In Mr. Hunter's paper on Castration and Spaying of Animals, which appeared in your issue of the 18th inst., he refers to any instrument (Webb's Emasculator) in terms which are calculated to produce an imperfect and erroneous impression of its reliability, and great practical utility.

I venture to say that no practitioner is justified in publishing his opinion of my instrument until he has impartially tested it, and ascertained by actual use whether it accomplishes or fails to accomplish all that is claimed for it.

Mr. Hunter has the frankness to admit that he has not seen the instrument tried, but he is "greatly afraid of hæmorrhage following its use." He may safely dissipate those fears. Against the speculative opinion thus set forth, I have the practical testimony of numerous persons who have seen me use the Emasculator with unvarying success. I should add, however, that the first few instruments issued were somewhat faulty in construction, and Mr. Hunter may have formed his opinion by inspecting one of them. But even that would not justify a partial condemnation without practical test.

I beg to say in conclusion that I desire nothing more than that Mr. Hunter should use the instrument in some of his future operations—especially now that Messrs. Arnolds have made the necessary alteration to my satisfaction—and put it to any severe practical test which may suggest itself, and then publish his revised opinion, which I have not the least doubt will be favourable in every way to the invention.

In justice to the Actual Cautery for Castration, I must say my only reason for abandoning it was in consequence of having to operate on colts at off-hand farms in the spring and summer months, when it caused me such delay in procuring a fire to heat my irons. I then tried the Torsion, which to me seemed so slow in its operation. Next I tried the Ecraseur, that likewise was very slow, and seemed to occasion a deal of pain, and in several cases extensive hæmorrhage ensued. Since then I invented the Emasculator, which in my hands, has proved most satisfactory. With bulls and calves I remove both testicles at the same time with the emasculator. The wooden clam I find the best when hernia exists.

Yours respectfully, JAMES WEBB,
(Late V.S. to the Royal Horse Artillery.
Veterinary Infirmary,
Bishop's Stortford,
January 25th, 1890.